

## **REMARKS**

These remarks are responsive to the Final Office Action mailed on November 17, 2008, (“the Office Action”). The Applicant thanks the Examiner for a careful and thorough examination of the above-referenced Application, as well as the indication of allowable subject matter.

### **Status of the Claims**

At the time of the Office Action, Claims 22-29 and 33-44 were pending, with no claims being allowed, Claims 22-29 and 33-44 being rejected, and no claims being objected to. Claims 22, 29 and 33 are amended herein. Support for these amendments may be found throughout the Specification. No new matter is being submitted.

### **35 U.S.C. § 103 Rejections**

Examiner has rejected Claims 22-26, 38, 39, 41, 42, and 44 under 35 U.S.C. §103(a) as being unpatentable under Healey (US 2002/0187701) in view of Shipp, Jr. *et al.* (US 4, 714, 647)(hereinafter “Shipp”). Applicant has amended the independent claims of the pending application to further distinguish the prior art, rendering this ground of rejection moot.

Claim 22, 29 and 33 have been amended in general to recite a fiber-size distribution through a thickness of the first layer of the mat portion which results in a first increasing permeability within the thickness of the first layer of mat portion. The claim also now recites that the first layer mat portion has a varying gradient density within the first layer of mat portion and wherein the first gradient density increases in a thickness direction through the first layered mat portion. Similarly, the second layer of mat portion

has a second varied fiber-sized distribution through a thickness of the second layer of mat portion wherein the varied fiber distribution results in a second varying gradient density and the second layered mat portion. In sum, Applicant has attempted to make clear that the first layered mat portion has a varying fiber-size distribution resulting in a varying permeability and a varying gradient density all within the thickness dimension of the first layered mat portion. Similarly the second layered mat portion also has a varying fiber-sized distribution resulting in varying permeability and varying gradient density within the thickness dimension of the second layered mat portion. These characteristics all increase in a direction of the thickness dimension of each of the first and second layered mat portions. Neither Healey nor Shipp, Jr. teach or suggest these claimed limitations alone or in combination.

As the Examiner states in Section 2 of his Office Action at page 2, the Healey reference teaches, “gradients in porosity between the different layers”. However, the reference fails to teach gradient densities within a single layer as claimed.

Similarly, Shipp, Jr. teaches a filter medium performed by depositing sequential layers of melt blown thermoplastic fibers. As pointed out by the Examiner, the abstract states, “the resulting laminate web has a fiber-sized gradient across its depth so that the large particulate can be trapped across the filter’s depth without prematurely plugging the fine fiber, high efficiency layers”. Thus, each layer of the laminate is taught to have a different fiber size. Each layer, however, is of a single size and not of a varying size, permeability and density through the thickness dimension of a specific layer, as taught and claimed by the Applicant.

The Applicant further provides the following instances of evidence of Shipp, Jr.'s failure to teach a fiber-sized gradient *within a single layer of the mat for filter medium*:

- Column 3, lines 50 through 52; "filter medium which has a gradient of fiber sizes *across the depth of the filter medium.*" (Emphasis added)
- Column 7, lines 19-22; "**composite web having layers** with fiber sizes of course, medium, fine, medium, and course fibers." (Emphasis added)
- Column 7, line 39 at claim 1; "a composite web . . . the web has a fiber-size gradient across its depth . . ."

As indicated from the above quotations, the Shipp, Jr. reference teaches each layer having a specific size and being one of extra fine, fine, medium, or course in various combinations. However the reference fails to teach or suggest anywhere in the specification or claims that any specific layer has a varying gradient density therethrough. Moreover, Applicant believes that in the process and equipment taught by Shipp, Jr., varying the density through any given layer would not be possible. Applicant's invention teaches that the collector is a rotating drum and both the use of moveable nozzles above the collector drum, the layers may be formed to vary in fiber size, density, and permeability therethrough. Such characteristics are not available within a specific layer when forming material on a mat-type collector. For these reasons, Applicant asserts that the Examiner's proposed combination of Healey and Shipp, Jr. would not have resulted in the claimed invention and respectfully request this ground of rejection be withdrawn.

Examiner has rejected claims 22-24, 26-29, 33-39, 41, 42, and 44 under 35 U.S.C. §103(a) as being unpatentable over Airflo (EP 0960645 A2) in view of Shipp, Jr.

(hereinafter “Shipp”). The Examiner first directed to page 4 subsections C and D referencing Shipp, Jr. and Healey. Applicant reviews this rejection in view of Airflo and Shipp, Jr. rather than Healey and Shipp, Jr. as Applicant believes the Examiner made this mistake. However, if the Applicant’s understanding is incorrect, Applicant would appreciate a call from the Examiner in order to review the matter further and to correct the assumption made herein.

The Examiner alleges that the Airflo reference teaches all the elements of the claimed invention, “but fails to teach or suggest increasing permeability through the thickness of the given layer.” The Examiner again relies upon Shipp, Jr. stating that the reference teaches, “a laminate web with fiber size and permeability gradient through the thickness of the laminate web.”

As previously indicated, the Examiner’s rejection fails. As stated by the Examiner, Airflo fails to teach or suggest increasing permeability through the thickness of the given layer. Applicant refers the Examiner to the Office Action at page 4, subsection b wherein the Examiner fails to state anywhere in the rejection that Shipp “teaches or suggests increasing permeability through the thickness of a given layer.” (mirroring the above language reciting the missing teachings of Airflo).

Shipp, Jr. fails to teach or suggest increasing permeability through the thickness of a given layer. As stated in the Examiner’s rejection, again referring to page 4, subsection b, the Examiner states that Shipp, Jr. teaches “a laminate web with fiber size and permeability gradients through the thickness of **the laminate web**.” Nowhere in the reference does Shipp, Jr. teach or suggest a density, permeability and fiber-size

distribution gradient through **a layer** of the mat. For these reasons, Applicant respectfully requests these grounds of rejection be withdrawn.

The Examiner has rejected Claims 22-27, 33, 34, 36, 38-41 and 43 under 35 U.S.C. §103(a) as being unpatentable over Healey (WO 01/32292 A1, hereinafter “Healey<sup>2</sup>”) in view of Shipp. Examiner asserts that the Healey<sup>2</sup> reference teaches microfiber polymer fine fibers wherein the diameter of the fibers is between .8 to about 1.5 microns. Examiner alleges that the range of fibers within each layer provides for the claim limitations of the varied fiber size and the medium results in permeability and porosity within each layered mat portion. The Examiner generally alleges that Healey teaches all of the claim limitations except for the increasing permeability through the thickness of the given layer. Examiner next alleges that Shipp teaches a laminate web with fiber-sizing permeability gradients through the thickness of the laminate web, and therefore the combination would render the Applicant’s claimed invention obvious.

Applicant asserts that the Examiner has misconstrued the teachings of Healey<sup>2</sup>. Healey<sup>2</sup> teaches that the diameter of the synthetic microfiber fine fibers is between about .8 to about 1.5, and preferably about 1 micron. This is a single average fiber size. Moreover the teaching is a range wherein the fiber size is an average one of a single size within the range between .8 and 1.5. Healey<sup>2</sup> teaches that the preferred fiber diameter size is preferably 1 micron. Moreover, there is no organization to the variation as presently claimed. This indicates further that the Examiner has misconstrued the teachings of the reference.

The Examiner is referred to page 4, lines 16-18. Additionally, the Examiner is referred to page 5, lines 21-24. Additionally, the Examiner is referred to page 6, lines 12-14. Additionally, the Examiner is referred to page 8, lines 27-31. The Examiner is additionally referred to page 12, lines 30 - page 13, line 1. Additionally, the Examiner is referred to page 13, lines 5-9. All of these references indicate a range of .8 to 1.5 microns, wherein the preferred diameter is 1 micron. Therefore, the Examiner has misconstrued the teachings of Healey<sup>2</sup> where the Examiner states that Healey<sup>2</sup> teaches varying fiber size within a specific range. Healey<sup>2</sup> instead teaches that a layer of fibrous media has a single diameter size wherein that single diameter size is within a range of .8 to 1.5 microns.

Further, with regards to Shipp, Applicant again asserts that the Shipp reference teaches variation across the laminate web, not across any single layer. And additionally, Shipp, nor Healey teach the amended limitations provided herein which further distinguish the art of record.

Claims 25, 40, 43 currently stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Airflo, in view of Shipp, and further in view of Healey<sup>2</sup>. The Applicant respectfully submits that the cited references, alone or in combination, fail to render the present invention obvious.

As previously described, the cited references fail to teach the varying fiber size distribution, gradient density and increasing permeability through a thickness dimension of a specific layer of material. Accordingly, the references fail to teach all of the elements of the independent claims and therefore fail to teach the missing elements of the dependent claims as well.

For at least the reasons set forth herein, the Applicant respectfully submits that the cited references fail to render obvious Claims 25, 40, 43. Thus, the Applicant respectfully requests that this ground of rejection be withdrawn.

**Conclusion**

The Applicant respectfully submits that the instant application is in condition for allowance. Reconsideration and notice of allowance are respectfully requested. If the Examiner believes that prosecution might be advanced by discussing the application with the Applicant's counsel, in person or over the telephone, the Applicant's counsel would welcome the opportunity to do so.

Respectfully submitted,

**MIDDLETON REUTLINGER**

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